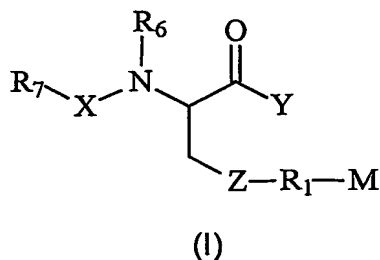


The claims defining the invention are as follows:

1. A compound having the formula (I), or a pharmaceutically acceptable derivative, salt, racemate, isomer or tautomer thereof:



wherein

10 Z is S or CH₂;

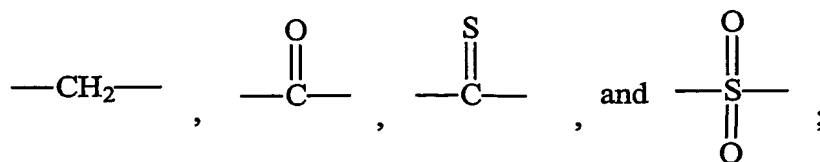
R₁ is a linking moiety;

M is a zinc binding moiety containing at least one heteroatom;

15

R₆ is selected from the group consisting of H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl and a nitrogen protecting group;

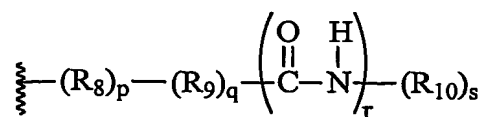
20 X is selected from the group consisting of:



25

Y is selected from the group consisting: of -NR₄R₅, -OR₄, -SR₄, -CH₂R₄, CHR₄R₅, C(R₄)₂R₅, PHR₄ and PR₄R₅,

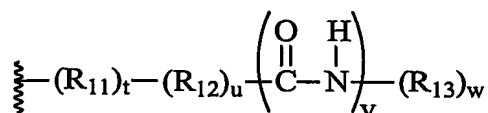
wherein R₄ is a group of formula:



wherein R_8 , R_9 and R_{10} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, and optionally substituted heterocycloalkyl;

p , q , r and s are each independently 0 or 1, provided that at least one of p , q or s is 1;

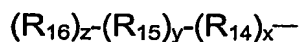
R_5 is H or a group of formula:



wherein R_{11} , R_{12} and R_{13} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, or optionally substituted heterocycloalkyl;

t , u , v and w are each independently 0 or 1, provided that at least one of t , u and w is 1;

R_7 is a group of formula:



wherein R_{14} , R_{15} and R_{16} are independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl,

optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl and optionally substituted heterocycloalkyl,

5 x, y and z are independently 0 and 1 with the proviso that at least one of x, y and z is 1.

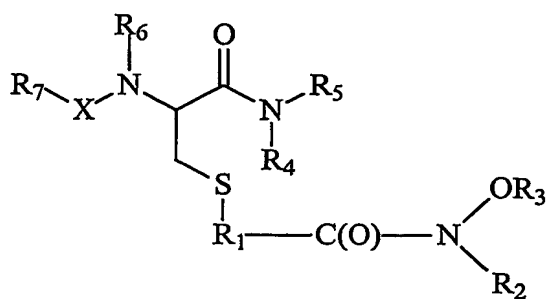
2. A compound as in claim 1, wherein the zinc binding moiety is a group of formula $-C(O)-NR_2-OR_3$ where R_2 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, or a nitrogen protecting group and R_3 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl or an oxygen protecting group.

15 3. A compound as in claim 2, wherein the linking moiety has between 1 and 9 atoms in the normal chain.

4. A compound as in claim 3, wherein the linking moiety has between 1 and 4 atoms in the normal chain.

20 5. A compound as in claim 4, wherein the linking moiety is an n-propyl chain.

6. A compound having the formula (IIIa), or a pharmaceutically acceptable derivative, salt, racemate, isomer or tautomer thereof:



(IIIa)

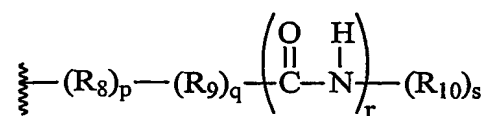
wherein

5 R_1 is optionally substituted C_1 - C_4 alkyl, optionally substituted C_1 - C_4 alkenyl or optionally substituted C_1 - C_4 alkynyl;

10 R_2 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, or a nitrogen protecting group;

R_3 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl or an oxygen protecting group;

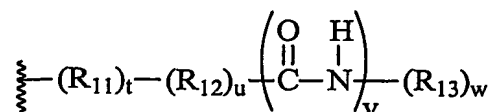
15 R_4 is a group of formula:



20 wherein R_8 , R_9 and R_{10} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, and optionally substituted heterocycloalkyl;

25 p , q , r and s are each independently 0 or 1, provided that at least one of p , q or s is 1;

R_5 is H or a group of formula:



30

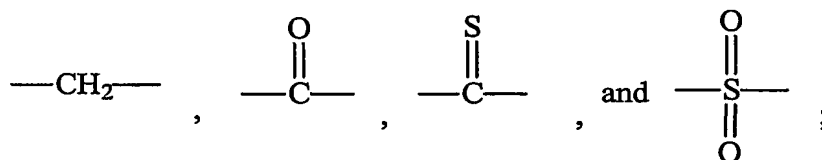
wherein R_{11} , R_{12} and R_{13} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, or optionally substituted heterocycloalkyl;

t , u , v and w are each independently 0 or 1, provided that at least one of t , u and w is 1.

R_6 is selected from the group consisting of H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl and a nitrogen protecting group;

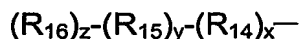
X is selected from the group consisting of

15



R_7 is a group of formula:

20



wherein R_{14} , R_{15} and R_{16} are independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl and optionally substituted heterocycloalkyl;

x , y and z are independently 0 and 1 with the proviso that at least one of x , y and z is 1.

30

7. A compound as in claim 6, wherein R_1 is optionally substituted C_1 - C_4 alkyl.

5 8. A compound as in claim 7, wherein R_1 is n-propyl.

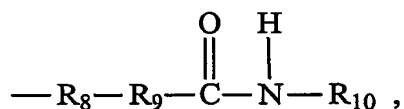
9. A compound as in claim 6, wherein R_2 is either H, optionally substituted C_1 - C_4 alkyl or a nitrogen protecting group.

10 10. A compound as in claim 9, wherein R_2 is H.

11. A compound as in claim 6, wherein R_3 is either H, optionally substituted C_1 - C_4 alkyl or an oxygen protecting group.

15 12. A compound as in claim 11, wherein R_3 is H.

13. A compound as in claim 6, wherein R_4 is of the formula:

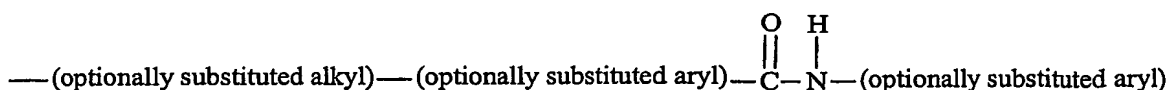


20

wherein R_8 , R_9 and R_{10} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, and optionally substituted heterocycloalkyl.

25

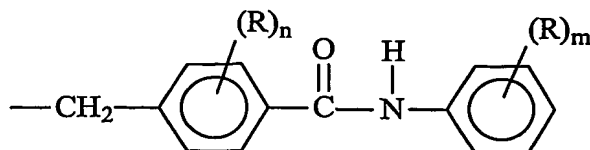
14. A compound as in claim 13, wherein R_4 is of the formula:



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15. A compound as in claim 14, wherein R_4 is a group of the formula.

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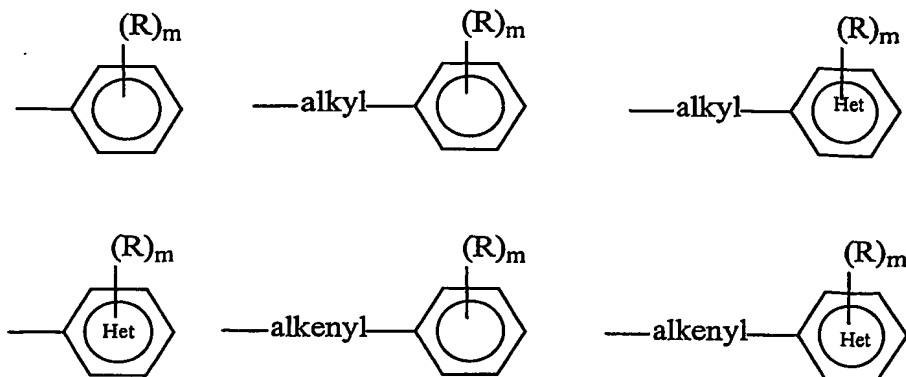
wherein each R is independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, cycloalkyl, heterocycloalkyl, halo, haloalkyl, haloalkenyl, haloalkynyl, haloaryl, haloheteroaryl, halocycloalkyl, haloheterocycloalkyl, hydroxy, alkoxy, alkenyloxy, aryloxy, heteroaryloxy, cycloalkyloxy, heterocycloalkyloxy, benzyloxy, haloalkoxy, haloalkenyloxy, haloaryloxy, haloheteroaryloxy, nitro, nitroalkyl, nitroalkenyl, nitroalkynyl, nitroaryl, nitroheteroaryl, nitroheterocycloalkyl, amino, alkylamino, dialkylamino, alkenylamino, alkynylamino, arylamino, heteroarylamino, diarylamino, benzylamino, dibenzylamino, acyl, alkenylacyl, alkynylacyl, arylacyl, heteroarylacyl, acylamino, diacylamino, acyloxy, alkylsulphonyloxy, arylsulphonyloxy, heterocycloalkylamino, alkylsulphonyl, arylsulphonyl, carboalkoxy, carboaryloxy, alkylthio, benzylthio, acylthio, cyano, nitro, sulfate and phosphate;

n is 0-4, and

m is 0-5.

20

16. A compound as in claim 13, wherein R_4 has one of the following formulae:



25

wherein each R is independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, cycloalkyl, heterocycloalkyl, halo, haloalkyl, haloalkenyl, haloalkynyl, haloaryl, haloheteroaryl, halocycloalkyl, haloheterocycloalkyl, hydroxy, alkoxy, alkenyloxy, aryloxy, heteroaryloxy, cycloalkyloxy, heterocycloalkyloxy, benzyloxy, haloalkoxy, haloalkenyloxy, haloaryloxy, haloheteroaryloxy, nitro, nitroalkyl, nitroalkenyl, nitroalkynyl, nitroaryl, nitroheteroaryl, nitroheterocycloalkyl, amino, alkylamino, dialkylamino, alkenylamino, alkynylamino, arylamino, heteroarylamino, diarylamino, benzylamino, dibenzylamino, acyl, alkenylacyl, alkynylacyl, arylacyl, heteroarylacyl, acylamino, diacylamino, acyloxy, alkylsulphonyloxy, arylsulphonyloxy, heterocycloalkylamino, alkylsulphonyl, arylsulphonyl, carboalkoxy, carboaryloxy, alkylthio, benzylthio, acylthio, cyano, nitro, sulfate and phosphate;

and each m is from 0-5.

17. A compound as in claim 6, wherein R_5 is either H or optionally substituted alkyl.

18. A compound as in claim 17, wherein R_5 is H.

19. A compound as in claim 6, wherein X is a carbonyl group.

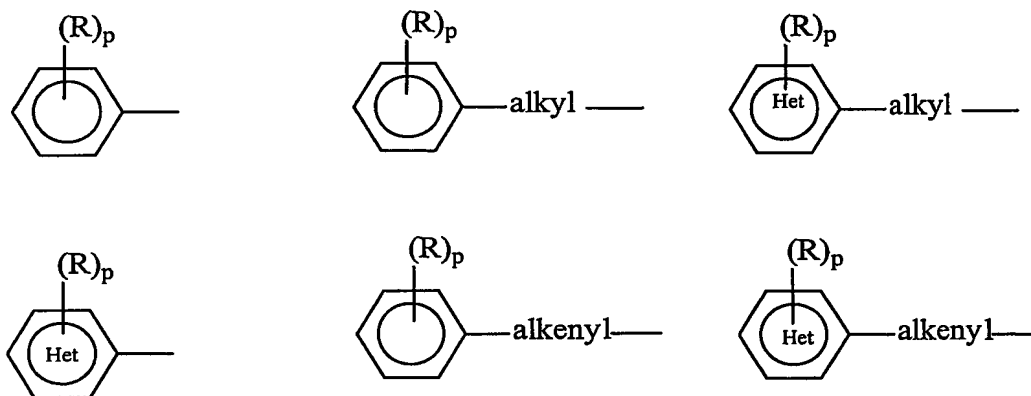
20. A compound as in claim 19, wherein R_6 is either H or a nitrogen protecting group.

21. A compound as in claim 20, wherein R_6 is H.

22. A compound as in claim 19, wherein R_7 is selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, optionally substituted cycloalkyl, optionally substituted heteroaryl, optionally substituted heterocycloalkyl, optionally substituted aryl alkyl, optionally substituted heteroaryl alkyl, optionally substituted cycloalkyl alkyl, optionally substituted

heterocycloalkyl alkyl, optionally substituted aryl alkenyl, optionally substituted hetero alkenyl, optionally substituted cycloalkyl alkenyl, optionally substituted heterocycloalkyl alkenyl, optionally substituted aryl alkynyl, optionally substituted heteroaryl alkynyl, optionally substituted cycloalkyl alkynyl, and
 5 optionally substituted heterocycloalkyl alkynyl.

23. A compound as in claim 22, wherein R_7 has one of the following formula:



10

wherein each R is independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, cycloalkyl, heterocycloalkyl, halo, haloalkyl, haloalkenyl, haloalkynyl, haloaryl, haloheteroaryl, halocycloalkyl, haloheterocycloalkyl, hydroxy, alkoxy, alkenyloxy, aryloxy, heteroaryloxy, cycloalkyloxy, heterocycloalkyloxy, benzyloxy, haloalkoxy, haloalkenyloxy, haloaryloxy, haloheteroaryloxy, nitro, nitroalkyl, nitroalkenyl, nitroalkynyl, nitroaryl, nitroheteroaryl, nitroheterocycloalkyl, amino, alkylamino, dialkylamino, alkenylamino, alkynylamino, arylamino, heteroarylamino, diarylamino, benzylamino, dibenzylamino, acyl, alkenylacyl, alkynylacyl, arylacyl, heteroarylacyl, acylamino, diacylamino, acyloxy, alkylsulphonyloxy, arylsulphonyloxy, heterocycloalkylamino, alkylsulphonyl, arylsulphonyl, carboalkoxy, carboaryloxy, alkylthio, benzylthio, acylthio, cyano, nitro, sulfate and phosphate;

25

and each p is from 0-5.

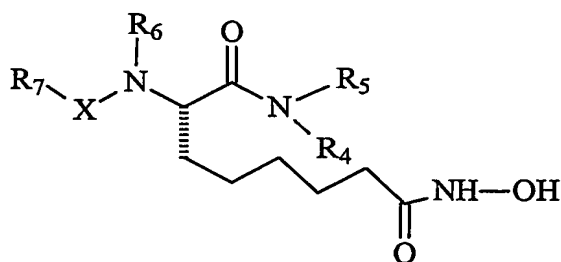
24. A compound as in claim 6, wherein the compound has a potency of cytotoxicity of IC_{50} $10 \mu M$ against MM96 melanoma cells.

25. A compound as in claim 24, wherein the compound has a Selectivity Index of 1.5.

26. A compound as in claim 25, wherein the compound has a potency of IC_{50} $1 \mu M$ against the MM96 melanoma cells and a Selectivity Index of 3.

27. A compound as in claim 26, wherein the compound has a potency of IC_{50} $0.5 \mu M$ against the MM96 melanoma cells and a Selectivity Index of 4.

28. A compound having the formula (IIIb), or a pharmaceutically acceptable derivative, salt, racemate, isomer or tautomer thereof:



(IIIb)

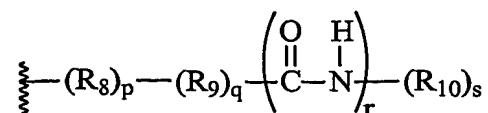
wherein

R_1 is optionally substituted C_1 - C_4 alkyl, optionally substituted C_1 - C_4 alkenyl or optionally substituted C_1 - C_4 alkynyl;

R_2 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, or a nitrogen protecting group;

R_3 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl or an oxygen protecting group;

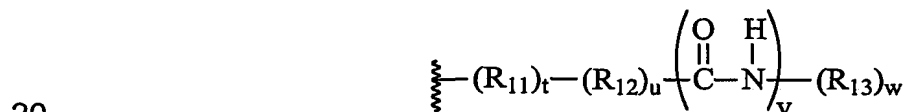
5 R_4 is a group of formula:



10 wherein R_8 , R_9 and R_{10} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, and optionally substituted heterocycloalkyl;

15 p , q , r and s are each independently 0 or 1, provided that at least one of p , q or s is 1;

R_5 is H or a group of formula:



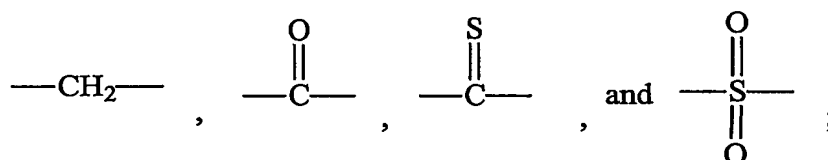
25 wherein R_{11} , R_{12} and R_{13} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, or optionally substituted heterocycloalkyl;

t , u , v and w are each independently 0 or 1, provided that at least one of t , u and w is 1.

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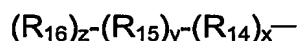
R₆ is selected from the group consisting of H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl and a nitrogen protecting group;

5 X is selected from the group consisting of



R₇ is a group of formula:

10



wherein R₁₄, R₁₅ and R₁₆ are independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl and optionally substituted heterocycloalkyl;

15

x, y and z are independently 0 and 1 with the proviso that at least one of x, y and z is 1.

20

29. A compound as in claim 28, wherein R₁ is optionally substituted C₁-C₄ alkyl.

25

30. A compound as in claim 29, wherein R₁ is n-propyl.

31. A compound as in claim 28, wherein R₂ is either H, optionally substituted C₁-C₄ alkyl or a nitrogen protecting group.

30

32. A compound as in claim 31, wherein R₂ is H.

33. A compound as in claim 28, wherein R₃ is either H, optionally substituted C₁-C₄ alkyl or an oxygen protecting group.

5

34. A compound as in claim 33, wherein R₃ is H.

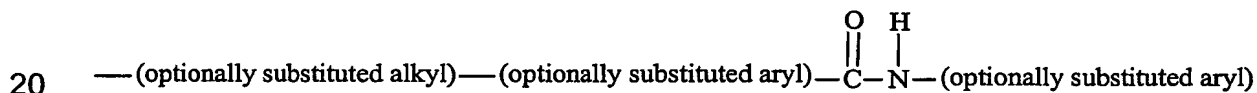
35. A compound as in claim 28, wherein R₄ is of the formula:



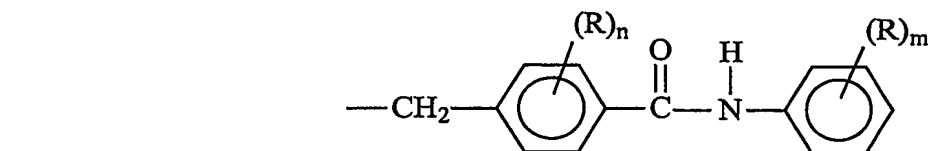
wherein R₈, R₉ and R₁₀ are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, and optionally substituted heterocycloalkyl.

15

36. A compound as in claim 35, wherein R₄ is of the formula:



37. A compound as in claim 36, wherein R₄ is a group of the formula.



wherein each R is independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, cycloalkyl, heterocycloalkyl, halo, haloalkyl, haloalkenyl, haloalkynyl, haloaryl, haloheteroaryl, halocycloalkyl, haloheterocycloalkyl, hydroxy, alkoxy, alkenyloxy, aryloxy, heteroaryloxy,

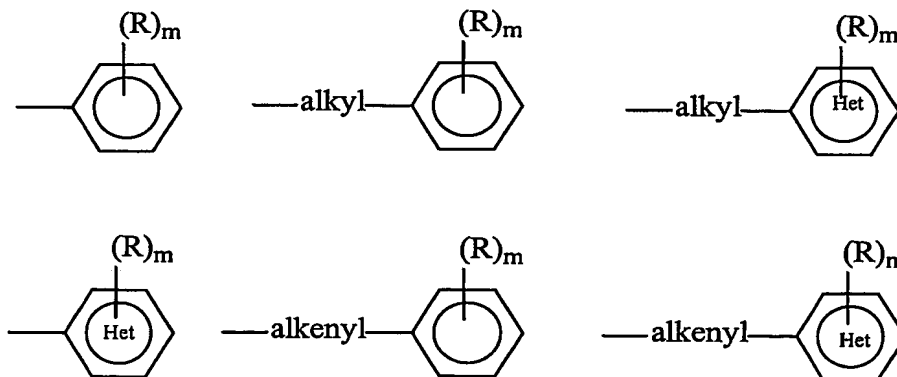
cycloalkyloxy, heterocycloalkyloxy, benzyloxy, haloalkoxy, haloalkenyloxy, haloaryloxy, haloheteroaryloxy, nitro, nitroalkyl, nitroalkenyl, nitroalkynyl, nitroaryl, nitroheteroaryl, nitroheterocyclyoalkyl, amino, alkylamino, dialkylamino, alkenylamino, alkynylamino, arylamino, heteroarylamino, diarylamino, benzylamino, dibenzylamino, acyl, alkenylacyl, alkynylacyl, arylacyl, heteroarylacyl, acylamino, diacylamino, acyloxy, alkylsulphonyloxy, arylsulphonyloxy, heterocycloalkylamino, alkylsulphonyl, arylsulphonyl, carboalkoxy, carboaryloxy, alkylthio, benzylthio, acylthio, cyano, nitro, sulfate and phosphate;

10

n is 0-4, and

m is 0-5.

15 38. A compound as in claim 35, wherein R_4 has one of the following formulae:



20 wherein each R is independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, cycloalkyl, heterocycloalkyl, halo, haloalkyl, haloalkenyl, haloalkynyl, haloaryl, haloheteroaryl, halocycloalkyl, haloheterocycloalkyl, hydroxy, alkoxy, alkenyloxy, aryloxy, heteroaryloxy, cycloalkyloxy, heterocycloalkyloxy, benzyloxy, haloalkoxy, haloalkenyloxy, haloaryloxy, haloheteroaryloxy, nitro, nitroalkyl, nitroalkenyl, nitroalkynyl, nitroaryl, nitroheteroaryl, nitroheterocyclyoalkyl, amino, alkylamino, dialkylamino, alkenylamino, alkynylamino, arylamino, heteroarylamino,

25

diaryl-amino, benzyl-amino, dibenzyl-amino, acyl, alkenyl-acyl, alkynyl-acyl, aryl-acyl, heteroaryl-acyl, acyl-amino, diacyl-amino, acyloxy, alkylsulphonyloxy, arylsulphonyloxy, heterocycloalkyl-amino, alkylsulphonyl, arylsulphonyl, carboalkoxy, carboaryloxy, alkylthio, benzylthio, acylthio, cyano, nitro, sulfate and phosphate;

and each m is from 0-5.

39. A compound as in claim 28, wherein R_5 is either H or optionally substituted alkyl.

40. A compound as in claim 39, wherein R_5 is H.

41. A compound as in claim 28, wherein X is a carbonyl group.

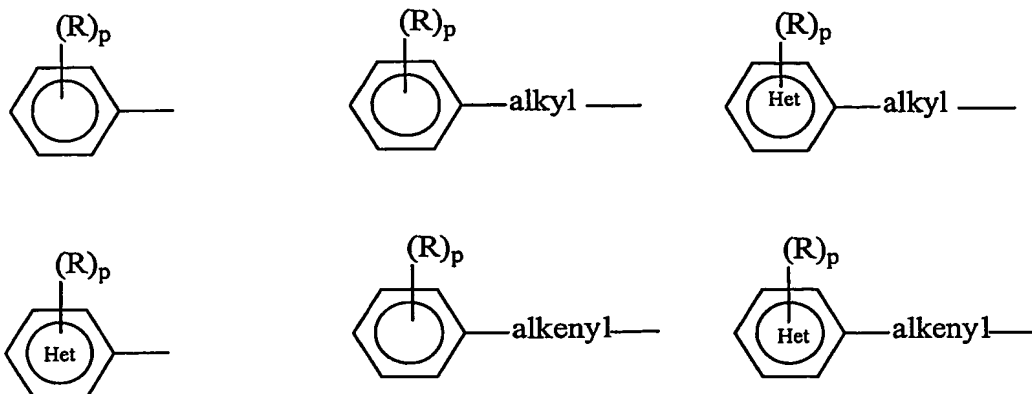
42. A compound as in claim 41, wherein R_6 is either H or a nitrogen protecting group.

43. A compound as in claim 42, wherein R_6 is H.

44. A compound as in claim 41, wherein R_7 is selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, optionally substituted cycloalkyl, optionally substituted heteroaryl, optionally substituted heterocycloalkyl, optionally substituted aryl alkyl, optionally substituted heteroaryl alkyl, optionally substituted cycloalkyl alkyl, optionally substituted heterocycloalkyl alkyl, optionally substituted aryl alkenyl, optionally substituted hetero alkenyl, optionally substituted cycloalkyl alkenyl, optionally substituted heterocycloalkyl alkenyl, optionally substituted aryl alkynyl, optionally substituted heteroaryl alkynyl, optionally substituted cycloalkyl alkynyl, and optionally substituted heterocycloalkyl alkynyl.

45. A compound as in claim 44, wherein R_7 has one of the following formula:

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wherein each R is independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, cycloalkyl, heterocycloalkyl, halo, haloalkyl, haloalkenyl, haloalkynyl, haloaryl, haloheteroaryl, halocycloalkyl, haloheterocycloalkyl, hydroxy, alkoxy, alkenyloxy, aryloxy, heteroaryloxy, cycloalkyloxy, heterocycloalkyloxy, benzyloxy, haloalkoxy, haloalkenyloxy, haloaryloxy, haloheteroaryloxy, nitro, nitroalkyl, nitroalkenyl, nitroalkynyl, nitroaryl, nitroheteroaryl, nitroheterocycloalkyl, amino, alkylamino, dialkylamino, alkenylamino, alkynylamino, arylamino, heteroarylamino, diarylamino, benzylamino, dibenzylamino, acyl, alkenylacyl, alkynylacyl, arylacyl, heteroarylacyl, acylamino, diacylamino, acyloxy, alkylsulphonyloxy, arylsulphonyloxy, heterocycloalkylamino, alkylsulphonyl, arylsulphonyl, carboalkoxy, carboaryloxy, alkylthio, benzylthio, acylthio, cyano, nitro, sulfate and phosphate;

and each p is from 0-5.

46. A compound as in claim 28, wherein the compound has a potency of cytotoxicity of $IC_{50} \leq 10 \mu M$ against MM96 melanoma cells.

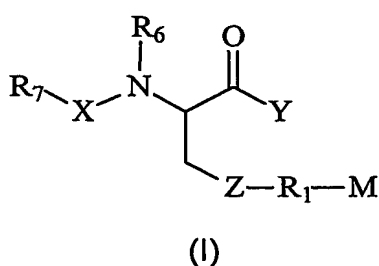
47. A compound as in claim 46, wherein the compound has a Selectivity Index of ≥ 1.5 .

25

48. A compound as in claim 47, wherein the compound has a potency of $IC_{50} \leq 1 \mu M$ against the MM96 melanoma cells and a Selectivity Index of ≥ 3 .

49. A compound as in claim 48, wherein the compound has a potency of IC_{50} 0.5 μ M against the MM96 melanoma cells and a Selectivity Index of 4.

- 5 50. A method for the treatment of cancer in an animal, the method including the step of administering to the animal in need of such treatment an effective amount of a compound having the formula (I), or a pharmaceutically acceptable derivative, salt, racemate, isomer or tautomer thereof:



wherein

15 Z is S or $-CH_2-$;

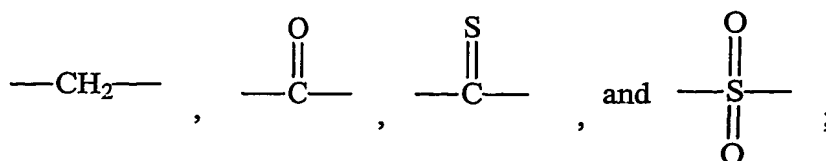
R_1 is a linking moiety;

M is a zinc binding moiety containing at least one heteroatom;

20

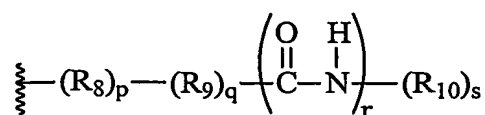
R_6 is selected from the group consisting of H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl and a nitrogen protecting group;

25 X is selected from the group consisting of:



Y is selected from the group consisting: of $-NR_4R_5$, $-OR_4$, $-SR_4$, $-CH_2R_4$, CHR_4R_5 , $C(R_4)_2R_5$, PHR_4 and PR_4R_5 ,

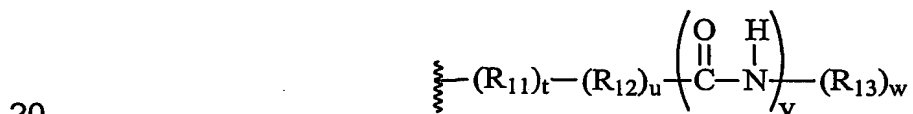
5 wherein R_4 is a group of formula:



10 wherein R_8 , R_9 and R_{10} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, and optionally substituted heterocycloalkyl;

15 p, q, r and s are each independently 0 or 1, provided that at least one of p, q or s is 1;

R_5 is H or a group of formula:

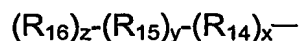


25 wherein R_{11} , R_{12} and R_{13} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, or optionally substituted heterocycloalkyl;

t, u, v and w are each independently 0 or 1, provided that at least one of t, u and w is 1;

30

R_7 is a group of formula:



wherein R_{14} , R_{15} and R_{16} are independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl and optionally substituted heterocycloalkyl,

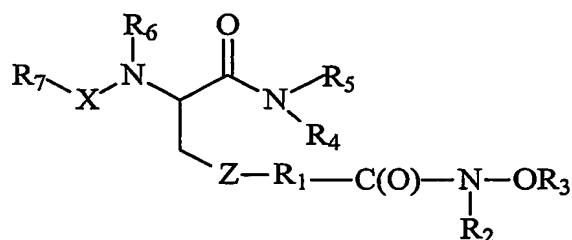
x , y and z are independently 0 and 1 with the proviso that at least one of x , y and z is 1.

51. A method as in claim 50, wherein the linking moiety has between 1 and 9 atoms in the normal chain.

52. A method as in claim 51, wherein the linking moiety has between 1 and 4 atoms in the normal chain.

53. A method as in claim 52, wherein the linking moiety is an n-propyl chain.

54. A method for the treatment of cancer in an animal, the method including the step of administering to the animal in need of such treatment an effective amount of a compound having the formula (III), or a pharmaceutically acceptable derivative, salt, racemate, isomer or tautomer thereof:



(III)

wherein

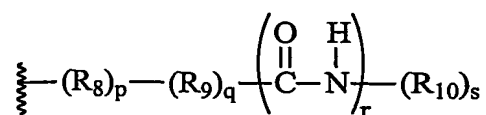
Z is S or CH_2 ;

R_1 is optionally substituted C_1 - C_4 alkyl, optionally substituted C_1 - C_4 alkenyl or optionally substituted C_1 - C_4 alkynyl;

5 R_2 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, or a nitrogen protecting group;

10 R_3 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl or an oxygen protecting group;

R_4 is a group of formula:



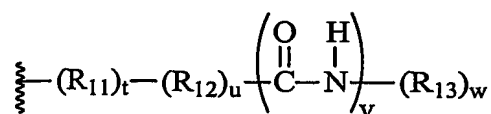
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wherein R_8 , R_9 and R_{10} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, and optionally substituted heterocycloalkyl;

20

p , q , r and s are each independently 0 or 1, provided that at least one of p , q or s is 1;

25 R_5 is H or a group of formula:



30

wherein R_{11} , R_{12} and R_{13} are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl,

optionally substituted aryl, optionally substituted heteroaryl, or optionally substituted heterocycloalkyl;

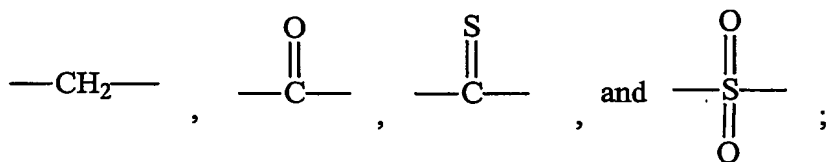
5

t, u, v and w are each independently 0 or 1, provided that at least one of t, u and w is 1;

10

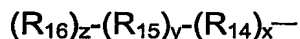
R₆ is selected from the group consisting of H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl and a nitrogen protecting group;

X is selected from the group consisting of



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R₇ is a group of formula:



20

wherein R₁₄, R₁₅ and R₁₆ are independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl and optionally substituted heterocycloalkyl,

25

x, y and z are independently 0 and 1 with the proviso that at least one of x, y and z is 1.

55. A method for the treatment of cancer as in claim 54, wherein R₁ is optionally substituted C₁–C₄ alkyl.

56. A method for the treatment of cancer as in claim 55, wherein R₁ is propyl.

57. A method for the treatment of cancer as in claim 54, wherein R₂ is either H, optionally substituted C₁-C₄ alkyl or a nitrogen protecting group.

5

58. A method for the treatment of cancer as in claim 57, wherein R₂ is a nitrogen protecting group.

59. A method for the treatment of cancer as in claim 57, wherein R₂ is H.

10

60. A method for the treatment of cancer as in claim 54, wherein R₃ is either H, optionally substituted C₁-C₄ alkyl or an oxygen protecting group.

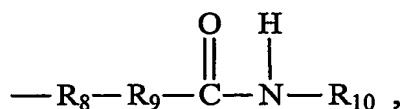
61. A method for the treatment of cancer as in claim 60, wherein R₃ is an oxygen protecting group.

15

62. A method for the treatment of cancer as in claim 60, wherein R₃ is H.

63. A method for the treatment of cancer as in claim 54, wherein R₄ is of the formula:

20

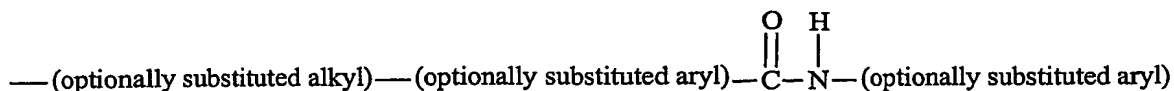


wherein R₈, R₉ and R₁₀ are each independently selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted aryl, optionally substituted heteroaryl, and optionally substituted heterocycloalkyl.

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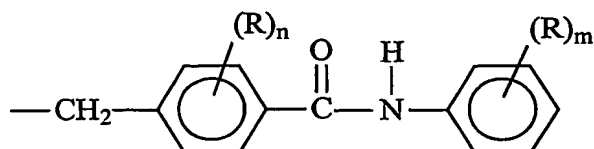
64. A method for the treatment of cancer as in claim 63, wherein R₄ is of the formula:

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65. A method for the treatment of cancer as in claim 64, wherein R₄ is a group of the formula.

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wherein each R is independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, cycloalkyl, heterocycloalkyl, halo, haloalkyl, haloalkenyl, haloalkynyl, haloaryl, haloheteroaryl, halocycloalkyl, haloheterocycloalkyl, hydroxy, alkoxy, alkenyloxy, aryloxy, heteroaryloxy, cycloalkyloxy, heterocycloalkyloxy, benzyloxy, haloalkoxy, haloalkenyloxy, haloaryloxy, haloheteroaryloxy, nitro, nitroalkyl, nitroalkenyl, nitroalkynyl, nitroaryl, nitroheteroaryl, nitroheterocycloalkyl, amino, alkylamino, dialkylamino, alkenylamino, alkynylamino, arylamino, heteroarylamino, diarylamino, benzylamino, dibenzylamino, acyl, alkenylacyl, alkynylacyl, arylacyl, heteroarylacyl, acylamino, diacylamino, acyloxy, alkylsulphonyloxy, arylsulphonyloxy, heterocycloalkylamino, alkylsulphonyl, arylsulphonyl, carboalkoxy, carboaryloxy, alkylthio, benzylthio, acylthio, cyano, nitro, sulfate and phosphate;

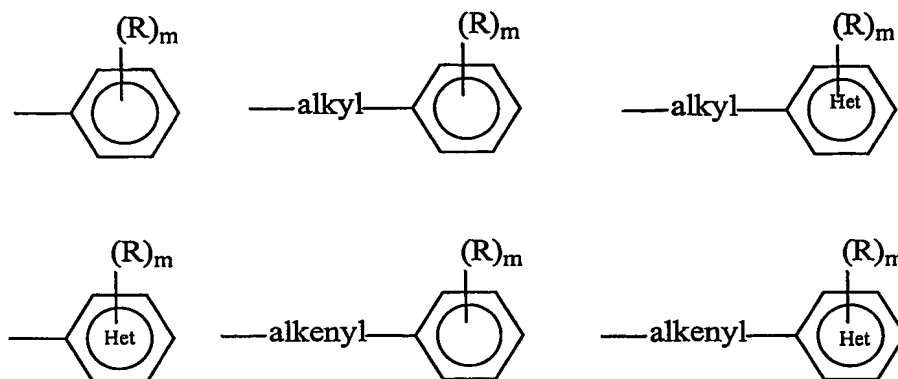
n is 0-4, and

m is 0-5.

25

66. A method for the treatment of cancer as in claim 64, wherein R₄ has one of the following formulas:

135



wherein each R is independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, cycloalkyl, heterocycloalkyl, halo, haloalkyl, haloalkenyl, haloalkynyl, haloaryl, haloheteroaryl, halocycloalkyl, haloheterocycloalkyl, hydroxy, alkoxy, alkenyloxy, aryloxy, heteroaryloxy, cycloalkyloxy, heterocycloalkyloxy, benzyloxy, haloalkoxy, haloalkenyloxy, haloaryloxy, haloheteroaryloxy, nitro, nitroalkyl, nitroalkenyl, nitroalkynyl, nitroaryl, nitroheteroaryl, nitroheterocycloalkyl, amino, alkylamino, dialkylamino, alkenylamino, alkynylamino, arylamino, heteroarylamino, diarylamino, benzylamino, dibenzylamino, acyl, alkenylacyl, alkynylacyl, arylacyl, heteroarylacyl, acylamino, diacylamino, acyloxy, alkylsulphonyloxy, arylsulphonyloxy, heterocycloalkylamino, alkylsulphonyl, arylsulphonyl, carboalkoxy, carboaryloxy, alkylthio, benzylthio, acylthio, cyano, nitro, sulfate and phosphate;

and each m is from 0-5.

67. A method for the treatment of cancer as in claim 54, wherein R₅ is either H or optionally substituted alkyl.

68. A method for the treatment of cancer as in claim 67, wherein R₅ is H.

69. A method for the treatment of cancer as in claim 54, wherein X is a carbonyl group.

70. A method for the treatment of cancer as in claim 69, wherein R_6 is either H or a nitrogen protecting group.

71. A method for the treatment of cancer as in claim 70, wherein R_6 is H.

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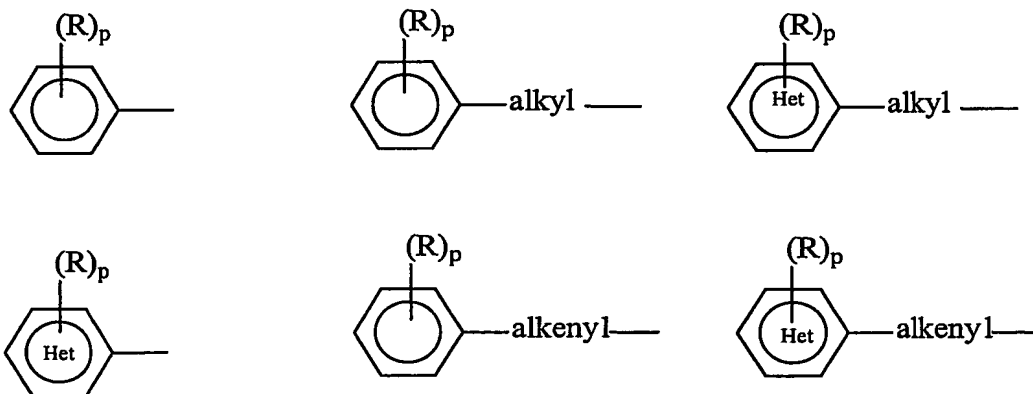
72. A method for the treatment of cancer as in claim 69, wherein R_7 is selected from the group consisting of optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, optionally substituted cycloalkyl, optionally substituted heteroaryl, optionally substituted heterocycloalkyl, optionally substituted aryl alkyl, optionally substituted heteroaryl alkyl, optionally substituted cycloalkyl alkyl, optionally substituted heterocycloalkyl alkyl, optionally substituted aryl alkenyl, optionally substituted hetero alkenyl, optionally substituted cycloalkyl alkenyl, optionally substituted heterocycloalkyl alkenyl, optionally substituted aryl alkynyl, optionally substituted heteroaryl alkynyl, optionally substituted cycloalkyl alkynyl, and optionally substituted heterocycloalkyl alkynyl.

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73. A method for the treatment of cancer as in claim 72, wherein R_7 has one of the following formula:

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wherein each R is independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, cycloalkyl, heterocycloalkyl, halo, haloalkyl, haloalkenyl, haloalkynyl, haloaryl, haloheteroaryl, halocycloalkyl, haloheterocycloalkyl, hydroxy, alkoxy, alkenyloxy, aryloxy, heteroaryloxy,

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cycloalkyloxy, heterocycloalkyloxy, benzyloxy, haloalkoxy, haloalkenyloxy, haloaryloxy, haloheteroaryloxy, nitro, nitroalkyl, nitroalkenyl, nitroalkynyl, nitroaryl, nitroheteroaryl, nitroheterocycloalkyl, amino, alkylamino, dialkylamino, alkenylamino, alkynylamino, arylamino, heteroarylamino, 5 diarylamino, benzylamino, dibenzylamino, acyl, alkenylacyl, alkynylacyl, arylacyl, heteroarylacyl, acylamino, diacylamino, acyloxy, alkylsulphonyloxy, arylsulphonyloxy, heterocycloalkylamino, alkylsulphonyl, arylsulphonyl, carboalkoxy, carboaryloxy, alkylthio, benzylthio, acylthio, cyano, nitro, sulfate and phosphate;

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and each p is from 0-5.

74. A method for the treatment of cancer as in claim 54, wherein the compound has a potency of cytotoxicity of IC_{50} 10 μ M against MM96 15 melanoma cells.

75. A method for the treatment of cancer as in claim 74, wherein the compound has a Selectivity Index of 1.5.

20 76. A method for the treatment of cancer as in claim 75, wherein the compound has a potency of IC_{50} 1 μ M against the MM96 melanoma cells and a Selectivity Index of 3.

25 77. A method for the treatment of cancer as in claim 76, wherein the compound has a potency of IC_{50} 0.5 μ M against the MM96 melanoma cells and a Selectivity Index of 4.

78. A method for the treatment of cancer as in claim 54, wherein the animal is a human.

30

79. A pharmaceutical composition containing one or more of the compounds of any one of claims 1 to 49 and a pharmaceutically acceptable, carrier, diluent or excipient.

80. The use of a compound of any one of claims 1 to 49 for the preparation of a medicament for the treatment of cancer.

81. A compound according to claim 1 and substantially as hereinbefore
5 described with reference to the accompanying examples.

DATED: 26 November 2004

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10 Attorneys for:

The University of Queensland